

## Remarks

In the following, references to Applicants' Specification are to paragraph numbers in the application's patent application publication 2005/0076065.

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### Support for the claims as amended

Applicants have amended their claims to set forth that the "aggregated entry" includes a

10 first field whose value is a metric value computed from a set of individual values of a field in the plurality of entries and a second field whose value is a representation of the individual values (claim 1)

In FIG. 3's table 301, the "first field" is supported by No. of hits field 115; the "second field" is supported by Set of hit times field 303; table 301 is described at [0031]-[0034]; the claim term "metric value" is defined at [0008]. As for new claims 49-56, these are 15 addressed to the species of the inventions of claims 1 and 25 that is disclosed in detail in Applicants' Specification. See in this regard Applicants' *Abstract*, prior art FIGs. 1 and 2, and FIG. 3 and the discussion of that figure at [0031]-[0034].

### Patentability of the claims as amended

20 *What Applicants are claiming*

There are two independent claims: claim 1 and claim 25, and claim 25 is a Beauregard form of claim 1. Claim 1 as presently amended reads as follows:

25 1. (currently amended) A method of aggregating a plurality of entries in a table in a database management system into an aggregated entry in the table or another table in the database management system, the method comprising the step of:

making the aggregated entry, the aggregated entry representing the plurality of entries and including a first field whose value is a metric value computed from a set of individual values of a field in the plurality of entries and a second field whose value is a representation of the individual values.

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As pointed out in the discussion of support for the claims as amended, an embodiment of the claim is shown in FIG. 3 and described at [0031]-[0034].

### *What the references disclose*

35 The references both describe data aggregation as it is employed in the multi-dimensional relational database systems which are used to analyze business information contained in relational database systems such as those used for on-line transaction processing. A

characteristic of such systems is that the data which is processed to do the aggregation remains available in the relational database system used for on-line transaction processing system after the aggregation is made for the multi-dimensional relational database system. Because that is the case, there is no need to make aggregated entries which contain both the aggregated value and a representation of the values used to make the aggregated value. As set forth above Applicants' independent claims as presently amended set forth such aggregated entries. The Bakalash and Lore references do not separately disclose such aggregated entries and disclose nothing which could be combined to disclose such aggregated entries.

10    Bakalash

Examiner cites paragraphs 25, 29, 55-57, 68, and 74 of Bakalash for disclosing "the representation specifying the individual members of the set" ("a second field whose value is a representation of the individual values" in the amended claim), but the cited locations disclose only that prior art systems aggregate data [0025], dimensions along which aggregations may be done [0029], pre-aggregation and indices to optimize query access times [0055]-[0057], multiple aggregation hierarchies [0068], and kinds of aggregation and summary tables with pre-aggregated results [0073]-[0074]. None of this discloses the claim's "second field whose value is a representation of the individual values", or indeed the claim's

20    aggregated entry representing the plurality of entries and including a first field whose value is a metric value computed from a set of individual values of a field in the plurality of entries and a second field whose value is a representation of the individual values

and as repeatedly pointed out in the course of the prosecution of this application, there is no  
25    such disclosure anywhere else in Bakalash. Indeed, one of the problems that arises from the lack of the "second field whose value is a representation of the individual values" is pointed out at [0077]:

30    [0077] summary tables do not provide a mechanism that allows efficient drill down to view the raw data that makes up the summary table-typically a table scan of one or more large tables is required.

Bakalash's solution to the problems of aggregation is the aggregation server of FIGs. 6A-6D, described beginning at [0174]. As set forth at [0176],

35    [0176] The Aggregation Server of the present invention excels in performing two distinct functions, namely: the aggregation of data in the MDDB; and the handling of the resulting data base in the MDDB, for "on demand" client use.

None of this, of course, has anything to do with what is claimed in claim 1.

Lore

- 5 Examiner cites Lore for teaching “the aggregated entry as explained by applicant”. The cited locations are paragraphs [0035]-[0039], [0068]-[0071], and [125] and [191]. What Lore discloses generally is a technique used in multi-dimensional databases for mapping “fact table” values to be aggregated onto “aggregation buckets” which contain aggregated values produced using the fact table values that are mapped onto the aggregation buckets. The aggregation  
10 buckets may be for different dimensions and cross products of the dimensions, for different levels of aggregation, and for different kinds of aggregation. The mapping is done by relation table 4, which is shown in detail in FIG. 5 and described beginning at [0083]. As FIG. 5 and the discussion clearly show, the values being aggregated exist only in the fact table records and the aggregated values exist only in the aggregation buckets. The data structures of FIG. 5 *contain*  
15 neither values from the fact table records nor aggregation buckets, but instead merely *map* fact table records onto aggregation buckets, so that the aggregates may be rapidly computed from the fact table records.

- Beginning with the locations cited by Examiner, [0035]-[0039] describes how Lore requires  
20 storage only for the aggregates that actually are provided with data and how the techniques of his invention require only that each key that identifies fact data to be aggregated be mappable onto the aggregates associated with the key. [0068]- [0071] explains Lore’s aggregate level codes [0069], aggregate keys [0070], and detail keys [0071]. None of this has anything to do with claim 1’s “second field whose value is a representation of the individual values”.  
25 Moreover, as is clear from FIG. 5 and its discussion, the individual values being aggregated exist only in the fact table and the aggregation buckets contain only the results of the aggregation; here, too, there is nowhere disclosed claim 1’s  
30 aggregated entry representing the plurality of entries and including a first field whose value is a metric value computed from a set of individual values of a field in the plurality of entries and a second field whose value is a representation of the individual values

Paragraph [125] describes uses of the relation table:

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[0125] The relation table 4 has three primary uses. Firstly, it provides information about the number of aggregate records for each level so that the index table can be populated. Secondly, it computes indexes of detail and aggregate keys that, when combined with the data from the index table, are used to locate the address of the aggregation buckets in the address file and the entries in the memory cache. Thirdly, it provides the list of aggregate records into which a given detail record needs to be aggregated.

10 The foregoing merely restates what has been pointed out with regard to FIG. 5 and its discussion beginning at [0083]. Again, there is no disclosure of anything like either the claim's "aggregated entry" as a whole or the "aggregated entry's" "second field". As for [0191], the cited paragraph explains rolling memory cache 8 of FIG. 2. [0162] gives an overview of the memory cache:

15 The cache structure in the presently preferred design eliminates the need for an expandable memory size. Three main components are involved in the whole cache structure: the memory cache, the address file, and the aggregate file. The memory cache stores aggregates in memory while the address and aggregate files together store aggregates in temporary files.

20 The memory cache is thus part of the storage arrangements for aggregate buckets. [0191] adds to this the explanation that the rolling cache permits partial aggregation, i.e., aggregation either on the bucket in the memory cache, if the bucket is in the cache, or on the bucket's aggregate file, if that is where the bucket is. Examiner sees [0191] as "teaching in detail the function of the aggregated entry which includes a field that represents the individual members and these 25 members are specified along with their addresses". The cited location simply does not do this, and it further does not disclose anything like either the claim's "aggregated entry" as a whole or the "aggregated entry's" "second field". Further, the mapping of fact values to aggregate buckets set forth in [0125] combined with the aggregate bucket implementation set forth in [0191] do not, when taken together, disclose either the claim's "aggregated entry" or the 30 "aggregated entry's" "second field".

*Patentability of the claims over the references*

Patentability of independent claims 1 and 25

35 Neither of the references discloses the "aggregated entry" set forth in Applicants' independent claims; consequently, the independent claims as amended are not rendered obvious by the combination of Bakalash and Lore. Since that is the case, the references also cannot render the dependent claims obvious.

Independent patentability of the dependent claims

As discussed in previous responses, the dependent claims set forth additional limitations that are not disclosed by the references, and are consequently independently patentable over the references.

Claims 2, 26, 50, and 54

The additional limitation here is that the plurality of entries represented by the aggregated entry are deleted. In both references, the aggregated values are *in addition to* the fact values from which they are made, and the fact values remain in the data warehouse or fact table after the aggregated values are computed. Indeed, *because* the fact values from which the aggregates are made remain in the data warehouse or fact table, there is no motivation whatever in the references for anything like the “second field whose value is a representation of the individual values” of Applicants’ claimed aggregate entry.

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Claims 49 and 53

The additional limitation here is the use of aggregation by a management service in a database management system to collect information about the occurrence of events in the database management system. Taken either individually or in combination, the references do not disclose anything about this application of aggregation and claims 49 and 53 are independently patentable over the references.

Claims 3-8, 27-32, 51-52, and 55-56

The additional limitations in these claims all further limit the second field of the claimed aggregate entry. Taken either individually or in combination, the references disclose nothing like the aggregate entry or its second field and all of these claims are independently patentable over the references.

**Conclusion**

30 Applicants have amended their claims to better define their inventions, have demonstrated that the claims as amended are fully supported by the Specification as filed, and have demonstrated that the amended claims are neither anticipated by the references nor rendered obvious by the combination of the references. Applicants’ *Submission* has thereby fulfilled the requirements of

37 C.F.R. 1.111(b) and 37 C.F.R. 1.114(c). Applicants have further included the required fee for the RCE and the *Request* and respectfully request that Examiner withdraw the finality of her rejection and continue with the examination of the claims as amended. Please charge any additional fees required for the amendment or refund any overpayments to deposit account number 501315.

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